

## CLAIMS

1. An exhaust purifying apparatus for an internal combustion engine on a vehicle, the apparatus having a regeneration control section, wherein the regeneration control section controls regeneration of an exhaust purification catalyst through heating control, in which fuel is supplied to the exhaust purification catalyst, thereby increasing a bed temperature of the catalyst, the apparatus being **characterized**  
10 **by:**

a determining section that determining whether the vehicle is driving downhill,

wherein the regeneration control section suspends the heating control when the determining section determines that  
15 the vehicle is driving downhill.

2. The apparatus according to claim 1, **characterized in that** the determining section determines that the vehicle is driving downhill when the amount of fuel injected by a fuel injection valve of the engine is equal to or less than a  
20 predetermined amount and the vehicle speed is equal to or greater than a predetermined speed.

3. The apparatus according to claim 2, **characterized in that** the determining section determines that the amount of fuel injected by the fuel injection valve is equal to or less than the predetermined amount when fuel cutoff control, in which fuel injection by the fuel injection valve is suspended, is being executed.  
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4. The apparatus according to any one of claims 1 to 3, **characterized in that** the regeneration control section suspends the heating control only when the determining section continuously determines for a predetermined period that the  
35 vehicle is driving downhill.

5. The apparatus according to any one of claims 1 to 4,  
**characterized in that**, while the heating control is suspended  
due to determination of the determining section that the  
5 vehicle is driving downhill, the regeneration control section  
resumes the heating control if the determining section  
determines that the vehicle is not driving downhill.

6. The apparatus according to claim 5, **characterized in**  
10 **that** the regeneration control section resumes the heating  
control only when the determining section continuously  
determines for a predetermined period that the vehicle is not  
driving downhill.

7. The apparatus according to any one of claims 1 to 6,  
**characterized in that** the heating control includes first  
heating control, in which the amount of fuel supplied to the  
exhaust purification catalyst is relatively small, and second  
heating control, in which the amount of fuel supplied to the  
20 exhaust purification catalyst is relatively large, wherein the  
regeneration control section suspends at least the second  
heating control when the determining section determines that  
the vehicle is driving downhill.

8. An exhaust purifying method for an internal  
combustion engine on a vehicle, **characterized by:**

supplying fuel to an exhaust purification catalyst to  
increase a bed temperature of the catalyst, thereby  
regenerating the exhaust purification catalyst;

30 determining whether the vehicle is driving downhill; and  
suspending the supply of fuel to the exhaust  
purification catalyst when the vehicle is determined to be  
driving downhill.